

5958 Inverse Triangular Numbers

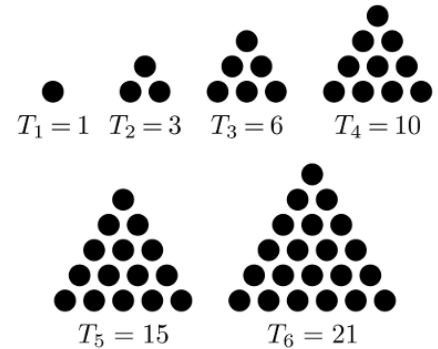
A triangular number is the number of dots that can be packed in an equilateral triangle with n dots on a side. Here are a few example triangles, with their corresponding triangular numbers:

You can easily see that a triangular number is the additive equivalent of a factorial:

$$T_n = \sum_{k=1}^n k$$

Your team is to write a program that will, given an integer value, determine if it is a triangular number. If the given value is a triangular number, determine the number of dots on a side.

Example: If k is 10, your program will report that it is a triangular number with 4 dots on a side, since $10 = 4 + 3 + 2 + 1$. If k is 11, your program will report that it is not a triangular number.



Input

Input to your program will be a series of lines. Each line contains an integer N , $0 < N < 10^9$ with no leading zeroes or spaces and no trailing spaces.

Output

Your program is to determine if each integer N is a triangular number. If it is, print a line containing the number of dots on a side. If it is not a triangular number, print a line containing the string 'bad'. In both cases print the answer with no leading zeroes or whitespace and no trailing whitespace.

Sample Input

```
55
1
91
587
499500
```

Sample Output

```
10
1
13
bad
999
```